THE WORLD WE LIVE IN; OR, FIRST LESSONS IN PHYSICAL GEOGRAPHY

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BY

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ETC.

FOR THE USE OF SCHOOLS AND STUDENTS.

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INTRODUCTORY NOTICE.

THE present work has been prepared in answer to numerous applications to the Author from persons engaged in tuition to provide a short and easy text-book of Physical Geography for the use of students in the various schools throughout the United Kingdom where this subject is taught. For junior pupils in these schools the Author's larger work on Physical Geography has been found too costly and too difficult. A new edition of this larger work, revised and expanded, is published with the present volume, at a reduced price, but the necessity for a simple text-book remained. It is hoped that this want is now supplied. The number of students in Physical Geography is so large, and increases so rapidly, that it is quite unnecessary to point out the great value of this department of science as an educational subject. This is now fully admitted throughout the kingdom. It remains only that the instruction should be sound, and that the subject should be rendered as simple and easy as its nature admits. With this view a Glossary of technical words has been introduced.

It must be needless to point out that the Author's larger treatise is in no sense superseded by this class-book. The present outline is not a mere abstract, and when its contents are mastered, the advanced student must attack the more complete work. There are few subjects more generally interesting, more definite, and more useful to every one than Physical Geography, and few are better fitted for class instruction. At the same time, an intelligent and energetic person can, in case of need, easily master its difficulties alone, and teach himself all that is to be known by books. As a science it offers both facts and inferences, and it also involves general principles.

D. T. ANSTED.

33, Brunswick Square, London,
15th September, 1868.

FIRST LESSONS

IN

PHYSICAL GEOGRAPHY.

CHAPTER I.

THE EARTH AND ITS HISTORY.

It is very desirable that those who live on any part of the earth should know something of their own country, and also that they should be able to compare its climate and productions with those of other countries. To an Englishman, who lives on an island favoured with a mild but rather damp climate, who finds growing and living around him a certain limited variety of plants and animals, and who knows that comparatively few of these are native to the soil, but have at various times been introduced from abroad (where, however, some of them are not produced to such perfection as with us), it is especially useful to know what is the state of things in these matters elsewhere. His attention is thus directed to other lands at a distance, whether in Europe, Asia, America, Africa, or Australia. He lives by commerce with these distant lands. He obtains their products and supplies them with much that they need. In all of them he has important interests. His travels for amusement or on business, his trade, and the many communications he is forced to make, all render it desirable that he should know as much about them as

possible. Their climate, soil, and productions differ so greatly, and their inhabitants are so dependent on these and on geographical position, that the cause and extent of these differences become an inquiry worthy of careful research.

This kind of research is called Physical geography. It is not the same thing as geography in the old sense of the word; that branch of knowledge is now called descriptive or political geography, and has reference chiefly to the artificial divisions introduced by man, and to the towns and villages built by him. It refers to rivers and seas, lofty mountain chains, vast plains, deserts, and valleys, but only so far as they afford means of communication, interrupt progress, affect trade, and separate human families.

By Physical geography we may understand the various natural relations of cause and effect that belong to the surface of our globe. It describes the distribution of land and sea, and, so far as can be determined, the causes and results of this distribution. It treats of the properties of water, and the extent of surface covered by it; the depth of the ocean, the tides and currents, and the nature of the sea-bottom. It considers the nature and extent of the air that floats over the general surface; it discusses and explains the mutual influence of air and water, the nature of climate, and the circulation of water through the air, and upon and beneath the earth. Besides these important points, it includes all that relates to the distribution of life and other phenomena, some of which we shall have occasion to allude to in these pages, and others that must for the present be deferred. It is enough to show now how much Physical geography teaches concerning many

matters that seem very simple, but that greatly influence the earth as a habitation.

The earth is a globe or ball, shaped something like an orange, and constantly spinning round like a humming-top. The peg of the top and the stick on which it is wound up represent what is called the axis of the earth, and the two ends are the poles. The earth revolves round its axis in the way that the top revolves round the stick. The line on the earth corresponding to that round the middle or largest part of the top is called the equator. The time taken for the earth to spin once round on its axis is a day, or twenty-four hours; and as the length of a line stretched round the earth in its middle or largest part is about 24,000 miles, it is clear that an object placed on the equator, and moving with the earth, proceeds at the rate of 1,000 miles an hour. If we imagine a number of rings, of different sizes, dropped on the top which represents the earth, while it is spinning, the largest will go nearest the middle or equator, and the smallest will remain parallel to it, and near the point where the stick comes through the top, which we have called the pole. The distance round each ring is the distance travelled by anything placed upon it, during one turn of the top. The distance is less as the ring is smaller. On the earth also, in proportion as we are more distant from the equator, the number of miles travelled per hour by any one on the surface is lessened. At the poles there is no distance travelled at all.

But the earth, besides spinning round like a top, also moves round the sun. If a child were to spin a top while seated in a merry-go-round at a fair, the movement of a fly or other small insect on the top would

nearly represent the movements of a person or place on the earth. Such motion is performed entirely without any sense of motion to him, and even without his knowledge, and without at all affecting his place in reference to other objects near him on the earth.

We need not stop here to consider the complications of these movements, but it is very desirable that every one should have an idea of their general nature before beginning to study Physical geography. The sun is represented in our rough illustration by the machinery that sets the merry-go-round in motion. Now the distance of the sun from the earth varies a little, but averages about 91¼ millions of miles, and the time taken by the earth to go once round is one year, or 365 days. The earth, therefore, moves round the sun at the rate of about 65,500 miles an hour, or more than 1,000 miles a minute. This vast speed is altogether unfelt, and the whole movement is consistent with perfect relative repose in the individual dwelling on the earth's surface.

The earth is accompanied by the moon, which moves round its axis like the earth, and round the earth as the earth does round the sun. The moon reflects light from the sun, and by its nearness, in proportion to the sun, it exercises considerable influence. It is the chief cause of the tides of the ocean.

It is impossible that the dead matter of which the earth, the sun, and the moon are composed should perform all these motions, keeping in their respective places in space from year to year and century to century, without some powerful ruling cause. We do not here speak of the great First Cause, to whom their original creation is due, but of those laws imposed